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PRODUCT MANUAL

Microwave energy series

2022

Qualification and Intellectual Property

COMPANY PROFILE

公司简介

Chengdu MapingPower Technology Co., Ltd is founded at July, 2019 and located in High-tech West Zone, Chengdu City, Sichuan Province. Focusing on development of methodologies and products in multi-applications including RF Energy, microwave/RF components, digital circuit, passive devices, and mechanical processing of structural components.



MapingPower has already been granted with 8 patents (utility model) while 5 patents for invention is under applying. Main Products of the company are waveguide products, such as auto-tuner, waveguide excitation, circulator, waveguide load, sliding short plunger and waveguide-to-coax adapter. Led by core members with doctorate or master's degree on electronic engineering or communications, our R&D team, with senior experience of make-to-order development and deep understanding of various requirements, can provide ultimate R&D service and solutions to multi-scenarios to customers with diversified backgrounds.



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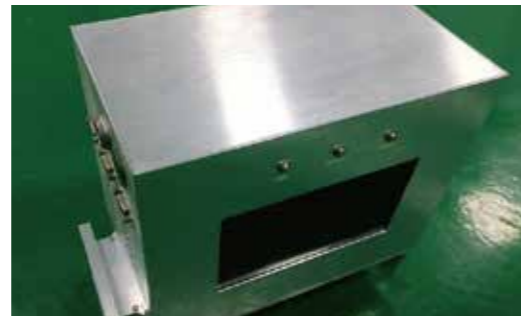
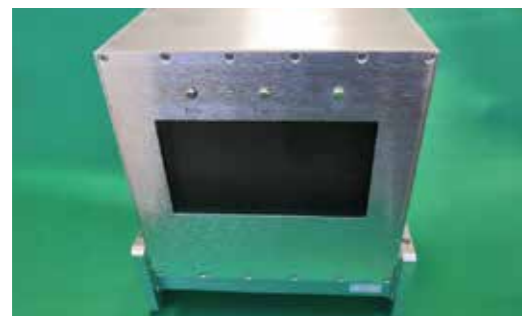
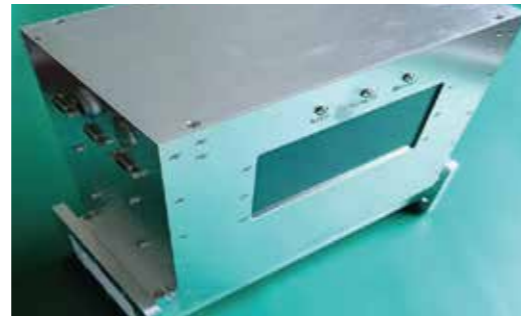
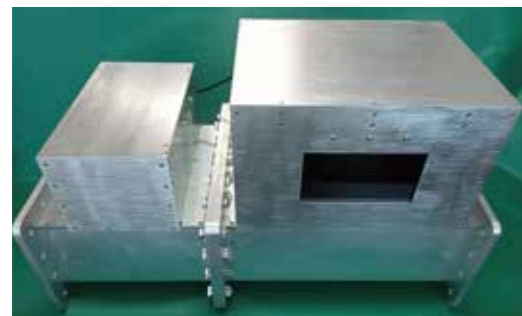
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Typical Data

01 Auto-Tuner

Auto-tuner is a microwave device that integrates parameter measurement, data calculation and automatic and rapid impedance tuning, available for WR975/WR430/WR340/WR284 waveguide. The power acquisition module in the device collects the power information, and measures the incident power, reflected power, load impedance and complex reflection coefficient of the system in real time.

According to the load mismatch, the depth of the three pins is automatically adjusted in real time to obtain the best impedance matching effects. The device has the advantages of accurate measurement, rapid tuning within 1s, and large VSWR tuning range of up to 15.



Waveguide type	BJ9 (WR975)	BJ22 (WR430)	BJ26 (WR340)	BJ32 (WR284)
Frequency range	900MHz~930MHz	2425MHz~2475MHz	2425MHz~2475MHz	2425MHz~2475MHz
Available maximum working power	≤100kW	≤20kW	≤20kW	≤10kW
Incident power measurement error (matched load)	≤±5%	≤±5%	≤±5%	≤±5%
Tuning range	≤15	≤10	≤10	≤8
VSWR result after adjustment (settable)	≤2	≤2	≤2	≤2
Time to achieve match	<2s	<1s	<1s	<1s
Power supply voltage	24V±10% DC	24V±10% DC	24V±10% DC	24V±10% DC
Peak current consumption (all stubs moving)	4A	3A	3A	3A
Current consumption (stubs resting)	0.7A	0.5A	0.5A	0.4A
Cooling mode	Air-Cooling& Water-Cooling	Air-Cooling& Water-Cooling	Air-Cooling& Water-Cooling	Air-Cooling& Water-Cooling
Interface	RS485/RS232	RS485/RS232	RS485/RS232	RS485/RS232
Max tuning stub travel	70mm	27mm	23mm	20mm
weight	≤34kg	≤10kg	≤10kg	≤10kg
Overall dimensions (length * width * height) mm	668*336.6*388.26	334*175.85*330.51	300*169.8*288	320*170.8*261.2
Operating temperature range	+5—+55°C	+5—+55°C	+5—+55°C	+5—+55°C
Storage temperature range	-10—+70°C	-10—+70°C	-10—+70°C	-10—+70°C

Typical Data

02 Waveguide Excitation

Company provides a series of waveguide excitation with high performance and low price. The main frequency is $915\pm 15\text{MHz}$, $2450\pm 50\text{MHz}$, $5800\pm 75\text{MHz}$, and the average power is $1\text{kW}\sim 100\text{kW}$. The product can match the magnetron installation commonly used in the industry and has the advantages of low VSWR and high-efficiency power output. The product surface can be treated by passivation, conductive oxidation, silver plating, etc. According to the actual needs of users, customized designs can be made for materials, external dimensions, flange forms, joint types, and surface processing methods.



Product model	Waveguide type	Frequency range (MHz)	Available maximum working power (kW)
MPHNWG9MEXA01	BJ9 (WR975)	$915\pm 15\text{MHz}$	100
MPHNWG22MEXA01	BJ22 (WR430)	$2450\pm 50\text{MHz}$	30
MPHNWG26MEXA01	BJ26 (WR340)	$2450\pm 50\text{MHz}$	30
MPHNWG32MEXA01	BJ32 (WR284)	$2450\pm 50\text{MHz}$	10
MPHNWG58MEXA01	BJ58 (WR159)	$5800\pm 75\text{MHz}$	1

Typical Data

03 Directional Coupler

Directional coupler is a general microwave component which can be used for signal isolation, separation, and mixing, such as power monitoring, power amplitude stability, frequency sweep testing for signal source isolation, transmission, and reflection. Frequency range: 915±15MHz, 2450±50MHz, 5800±75MHz, coupling degree can be selected from 20dB to 60dB, directivity is greater than 20dB, amplitude consistency: ±0.5dB, main line VSWR is less than 1.08, side line VSWR is less than 1.25. The number of coupling terminals can be selected with single coupling and double coupling. The product surface can be treated by passivation, conductive oxidation, silver plating, etc. According to the actual needs of users, customized designs can be made for materials, external dimensions, flange forms, joint types, and surface processing methods.



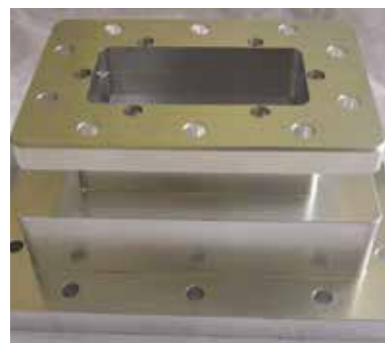
Product model	Frequency range (GHz)	Working bandwidth	Optional coupling degree	Directivity (dB)	Main line VSWR	Side line VSWR
MPHNWG9DCXXA01N	0.75-1.15	≤20%	20~60	≥20	≤1.08	≤1.25
MPHNWG12DCXXA01N	0.96-1.46	≤20%	20~60	≥20	≤1.08	≤1.25
MPHNWG14DCXXA01N	1.13-1.73	≤20%	20~60	≥20	≤1.08	≤1.25
MPHNWG18DCXXA01N	1.45-2.20	≤20%	20~60	≥20	≤1.08	≤1.25
MPHNWG22DCXXA01N	1.72-2.61	≤20%	20~60	≥20	≤1.08	≤1.25
MPHNWG26DCXXA01N	2.17-3.30	≤20%	20~60	≥20	≤1.08	≤1.25
MPHNWG32DCXXA01N	2.60-3.95	≤20%	20~60	≥20	≤1.08	≤1.25
MPHNWG40DCXXA01N	3.22-4.90	≤20%	20~60	≥20	≤1.08	≤1.25
MPHNWG48DCXXA01N	3.94-5.99	≤20%	20~60	≥20	≤1.08	≤1.25
MPHNWG58DCXXA01N	4.64-7.05	≤20%	20~60	≥20	≤1.08	≤1.25
MPHNWG70DCXXA01N	5.38-8.17	≤20%	20~60	≥20	≤1.08	≤1.25
MPHNWG84DCXXA01N	6.57-9.99	≤20%	20~60	≥20	≤1.08	≤1.25
MPHNWG100DCXXA01N	8.2-12.4	≤20%	20~60	≥20	≤1.08	≤1.25

Note: XX stands for coupling degree

Typical Data

04 Waveguide Connector

Waveguide connector is a waveguide product with high transmission frequency band and high transmission capacity. It has the characteristics of small size, light weight, high transmission frequency and anti-electromagnetic interference. Company provides a series of commonly used waveguide connectors; the interface of rectangular waveguide can be selected from BJ9 to BJ58. VSWR is less than 1.05, and IL is less than 0.1dB. Waveguide connectors include straight waveguides, E-plane curved waveguides, H-plane curved waveguides, waveguide converters, rectangular-circular waveguide transducer, etc. The product surface can be treated by passivation, conductive oxidation, silver plating, etc. According to the actual needs of users, customized designs can be made for materials, external dimensions, flange forms, joint types, and surface processing methods.



Product model	Frequency range (GHz)	VSWR	Flange form	Material	Surface processing method
MPHNWG3LXA01	0.32-0.49	≤1.05	FDP/FDM	Aluminum	Conductive oxidation
MPHNWG4LXA01	0.35-0.53	≤1.05	FDP/FDM	Aluminum	Conductive oxidation
MPHNWG5LXA01	0.41-0.62	≤1.05	FDP/FDM	Aluminum	Conductive oxidation
MPHNWG6LXA01	0.49-0.75	≤1.05	FDP/FDM	Aluminum	Conductive oxidation
MPHNWG8LXA01	0.64-0.98	≤1.05	FDP/FDM	Aluminum	Conductive oxidation
MPHNWG9LXA01	0.75-1.15	≤1.05	FDP/FDM	Aluminum	Conductive oxidation
MPHNWG12LXA01	0.96-1.46	≤1.05	FDP/FDM	Aluminum	Conductive oxidation
MPHNWG14LXA01	1.13-1.73	≤1.05	FDP/FDM	Aluminum	Conductive oxidation
MPHNWG18LXA01	1.45-2.20	≤1.05	FDP/FDM	Aluminum	Conductive oxidation
MPHNWG22LXA01	1.72-2.61	≤1.05	FDP/FDM	Aluminum	Conductive oxidation
MPHNWG26LXA01	2.17-3.30	≤1.05	FDP/FDM	Aluminum	Conductive oxidation
MPHNWG32LXA01	2.60-3.95	≤1.05	FDP/FDM	Aluminum	Conductive oxidation
MPHNWG40LXA01	3.22-4.90	≤1.05	FDP/FDM	Aluminum	Conductive oxidation
MPHNWG48LXA01	3.94-5.99	≤1.05	FDP/FDM	Aluminum	Conductive oxidation
MPHNWG58LXA01	4.64-7.05	≤1.05	FDP/FDM	Aluminum	Conductive oxidation
MPHNWG70LXC01	5.38-8.17	≤1.10	FDP/FDM	Copper	Silver plating
MPHNWG84LXC01	6.57-9.99	≤1.10	FBP/FBM	Copper	Silver plating
MPHNWG100LXC01	8.20-12.40	≤1.10	FBP/FBM	Copper	Silver plating
MPHNWG120LXC01	9.84-15.0	≤1.10	FBP/FBM	Copper	Silver plating
MPHNWG140LXC01	11.9-18.0	≤1.10	FBP/FBM	Copper	Silver plating
MPHNWG180LXC01	14.5-22.0	≤1.10	FBP/FBM	Copper	Silver plating
MPHNWG220LXC01	17.6-26.7	≤1.10	FBP/FBM	Copper	Silver plating
MPHNWG260LXC01	21.7-33.0	≤1.10	FBP/FBM	Copper	Silver plating
MPHNWG320LXC01	26.5-40.0	≤1.10	FBP/FBM	Copper	Silver plating

Typical Data

05 Waveguide-to-Coax Adapter

In the field of RF/microwave, coaxial wire and waveguide are the most widely used transmission lines for transmitting microwave energy. However, there are huge differences between the two transmission lines in terms of size, material, and transmission characteristics. There are often occasions that need to connect two kinds of transmission lines due to the wide range of applications, and the waveguide-to-coax adapter plays the role of connecting the two transmission lines. Company provides a series of waveguide-to-coax adapter with the characteristics of wide frequency band, complete specifications, low VSWR and IL. The frequency range of product is from 0.3GHz to 40GHz, and VSWR is less than 1.25 in full bandwidth and 1.15 in 10% of the bandwidth. Products are divided into two structure types of end connection and orthogonal connection. Coaxial connectors are available in 7/16, N, TNC, L29, SMA, 3.5mm, 2.92mm, 2.4mm, etc. Waveguide type can be selected from BJ3 (WR2300) to BJ320 (WR28). The product surface can be treated by passivation, conductive oxidation, silver plating, etc. According to the actual needs of users, customized designs can be made for materials, external dimensions, flange forms, joint types, and surface processing methods.



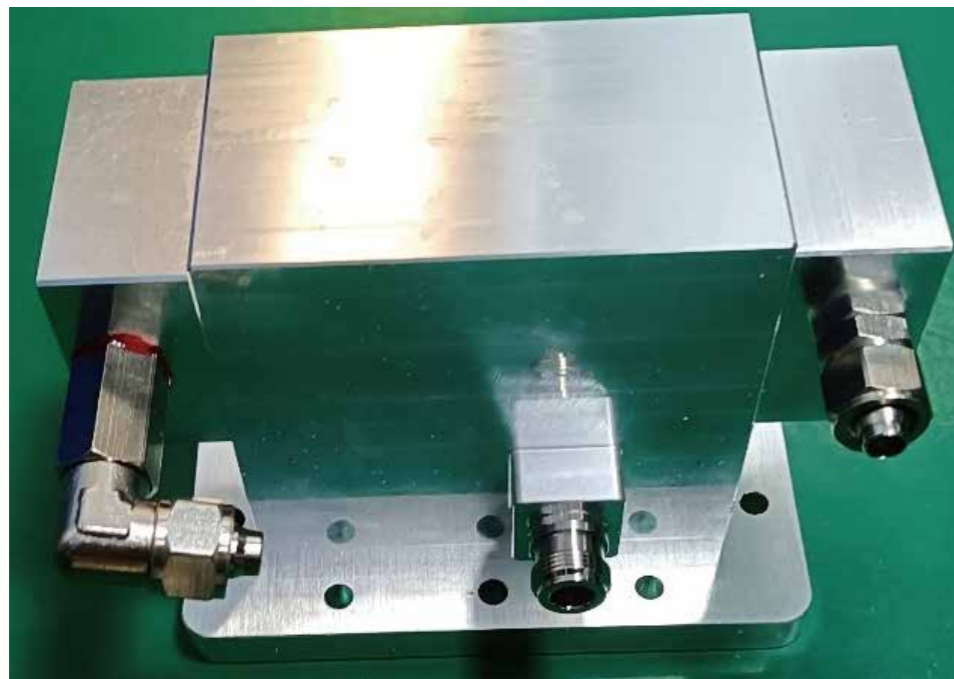
Product model	Frequency range (GHz)	VSWR	IL (dB)	Flange form	Material	Surface processing method
MPHNWG3CXA01N	0.32-0.49	≤1.25	≤0.2	FDP	Aluminum	Conductive oxidation
MPHNWG4CXA01N	0.35-0.53	≤1.25	≤0.2	FDP	Aluminum	Conductive oxidation
MPHNWG5CXA01N	0.41-0.62	≤1.25	≤0.2	FDP	Aluminum	Conductive oxidation
MPHNWG6CXA01N	0.49-0.75	≤1.25	≤0.2	FDP	Aluminum	Conductive oxidation
MPHNWG8CXA01N	0.64-0.98	≤1.25	≤0.2	FDP	Aluminum	Conductive oxidation
MPHNWG9CXA01N	0.75-1.15	≤1.25	≤0.2	FDP	Aluminum	Conductive oxidation
MPHNWG12CXA01N	0.96-1.46	≤1.25	≤0.2	FDP	Aluminum	Conductive oxidation
MPHNWG14CXA01N	1.13-1.73	≤1.25	≤0.2	FDP	Aluminum	Conductive oxidation
MPHNWG18CXA01N	1.45-2.20	≤1.25	≤0.2	FDP	Aluminum	Conductive oxidation
MPHNWG22CXA01N	1.72-2.61	≤1.25	≤0.2	FDP	Aluminum	Conductive oxidation
MPHNWG26CXA01N	2.17-3.30	≤1.25	≤0.2	FDP	Aluminum	Conductive oxidation
MPHNWG32CXA01N	2.60-3.95	≤1.25	≤0.2	FDP	Aluminum	Conductive oxidation
MPHNWG40CXA01N	3.22-4.90	≤1.25	≤0.2	FDP	Aluminum	Conductive oxidation
MPHNWG48CXA01N	3.94-5.99	≤1.25	≤0.2	FDP	Aluminum	Conductive oxidation
MPHNWG58CXA01N	4.64-7.05	≤1.25	≤0.2	FDP	Aluminum	Conductive oxidation
MPHNWG70CXC01N	5.38-8.17	≤1.25	≤0.2	FDP	Copper	Silver plating
MPHNWG84CXC01N	6.57-9.99	≤1.25	≤0.3	FBP	Copper	Silver plating
MPHNWG100CXC01N	8.20-12.4	≤1.25	≤0.3	FBP	Copper	Silver plating
MPHNWG120CXC01N	9.84-15.0	≤1.25	≤0.3	FBP	Copper	Silver plating
MPHNWG140CXC01N	11.9-18.0	≤1.25	≤0.3	FBP	Copper	Silver plating
MPHNWG180CXC01N	14.5-22.0	≤1.25	≤0.3	FBP	Copper	Silver plating
MPHNWG220CXC01N	17.6-26.7	≤1.25	≤0.3	FBP	Copper	Silver plating
MPHNWG260CXC01N	21.7-33.0	≤1.25	≤0.3	FBP	Copper	Silver plating
MPHNWG320CXC01N	26.5-40.0	≤1.25	≤0.3	FBP	Copper	Silver plating

Note: CX stands for structural form, CN stands for end connection, CO stands for orthogonal connection. Last letter stands for joint categories.

Typical Data

06 Waveguide Load

Company provides high-power & low-power dry load and water load. Waveguide type can be selected from BJ8 to BJ320, and power capacity can be selected from 5W to 100kW. The adaptive load and adjustable waveguide load with specific VWSR can be customized according to customer requirements. The product surface can be treated by passivation, conductive oxidation, silver plating, etc. According to the actual needs of users, customized designs can be made for materials, external dimensions, flange forms, joint types, and surface processing methods.

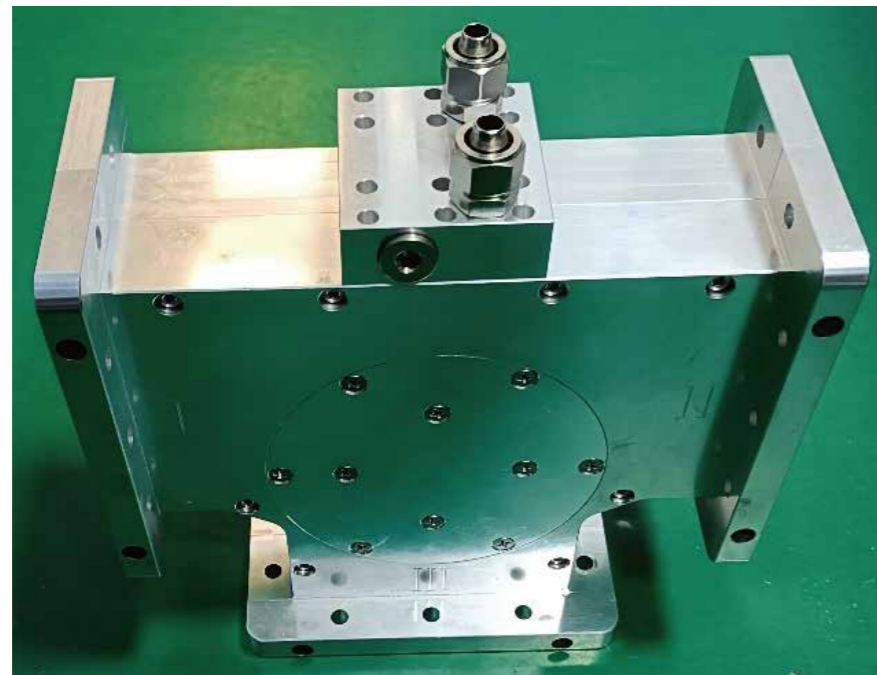


Product model	Frequency range	Bandwidth	VS WR	Power range (kW)	Flange form	Material	Surface processing method
MPHNWG8WLA01	0.64-0.98	≤15%	≤1.25	3-100	FDP	Aluminum	Conductive oxidation
MPHNWG9WLA01	0.75-1.15	≤15%	≤1.25	3-100	FDP	Aluminum	Conductive oxidation
MPHNWG12WLA01	0.96-1.46	≤15%	≤1.25	3-50	FDP	Aluminum	Conductive oxidation
MPHNWG14WLA01	1.13-1.73	≤15%	≤1.25	3-50	FDP	Aluminum	Conductive oxidation
MPHNWG18WLA01	1.45-2.20	≤15%	≤1.25	3-50	FDP	Aluminum	Conductive oxidation
MPHNWG22WLA01	1.72-2.61	≤15%	≤1.25	1-30	FDP	Aluminum	Conductive oxidation
MPHNWG26WLA01	2.17-3.30	≤15%	≤1.25	1-30	FDP	Aluminum	Conductive oxidation
MPHNWG32WLA01	2.60-3.95	≤15%	≤1.25	1-15	FDP	Aluminum	Conductive oxidation
MPHNWG40WLA01	3.22-4.90	≤15%	≤1.25	1-12	FDP	Aluminum	Conductive oxidation
MPHNWG48WLA01	3.94-5.99	≤15%	≤1.25	1-12	FDP	Aluminum	Conductive oxidation
MPHNWG58WLA01	4.64-7.05	≤15%	≤1.25	1-10	FDP	Aluminum	Conductive oxidation
MPHNWG70WLC01	5.38-8.17	≤15%	≤1.25	1-10	FDP	Copper	Silver plating
MPHNWG84WLC01	6.57-9.99	≤15%	≤1.25	1-10	FBP	Copper	Silver plating
MPHNWG100WLC01	8.20-12.4	≤15%	≤1.25	1-10	FBP	Copper	Silver plating
MPHNWG120WLC01	9.84-15.0	≤15%	≤1.25	1-10	FBP	Copper	Silver plating
MPHNWG140WLC01	11.9-18.0	≤15%	≤1.25	0.5-5	FBP	Copper	Silver plating
MPHNWG180WLC01	14.5-22.0	≤15%	≤1.25	0.5-5	FBP	Copper	Silver plating
MPHNWG220WLC01	17.6-26.7	≤15%	≤1.30	0.5-5	FBP	Copper	Silver plating
MPHNWG260WLC01	21.7-33.0	≤15%	≤1.30	0.5-5	FBP	Copper	Silver plating
MPHNWG320WLC01	26.5-40.0	≤15%	≤1.30	0.5-5	FBP	Copper	Silver plating

Typical Data

07 Circulator

Circulator is a microwave product designed by using the gyromagnetic properties of ferrite materials. The microwave can travel in a unidirectional loop inside itself while working. While transmitting microwaves, circulator can also protect the microwave source when the output load is unbalanced. Company provides a series of high-performance circulator of VSWR within 1.2, IL within 0.25dB and isolation greater than 20dB. Frequency range can be selected from 0.75GHz to 40GHz, and waveguide type can be selected from BJ9 to BJ320. The product surface can be treated by passivation, conductive oxidation, silver plating, etc. According to the actual needs of users, customized designs can be made for materials, external dimensions, flange forms, joint types, and surface processing methods.



Product model	Frequency range (GHz)	Bandwidth	VSWR	IL(dB)	Isolation (dB)	Flange form	Material	Surface processing method
MPHNWG9CIA01	0.75-1.15	≤5%	≤1.2	≤0.25	≥20	FDP	Aluminum	Conductive oxidation
MPHNWG12CIA01	0.96-1.46	≤5%	≤1.2	≤0.25	≥20	FDP	Aluminum	Conductive oxidation
MPHNWG14CIA01	1.13-1.73	≤5%	≤1.2	≤0.25	≥20	FDP	Aluminum	Conductive oxidation
MPHNWG18CIA01	1.45-2.20	≤5%	≤1.2	≤0.25	≥20	FDP	Aluminum	Conductive oxidation
MPHNWG22CIA01	1.72-2.61	≤10%	≤1.2	≤0.25	≥20	FDP	Aluminum	Conductive oxidation
MPHNWG26CIA01	2.17-3.30	≤10%	≤1.2	≤0.25	≥20	FDP	Aluminum	Conductive oxidation
MPHNWG32CIA01	2.60-3.95	≤10%	≤1.2	≤0.25	≥20	FDP	Aluminum	Conductive oxidation
MPHNWG40CIA01	3.22-4.90	≤10%	≤1.2	≤0.25	≥20	FDP	Aluminum	Conductive oxidation
MPHNWG48CIA01	3.94-5.99	≤10%	≤1.2	≤0.25	≥20	FDP	Aluminum	Conductive oxidation
MPHNWG58CIA01	4.64-7.05	≤10%	≤1.2	≤0.25	≥20	FDP	Aluminum	Conductive oxidation
MPHNWG70CIA01	5.38-8.17	≤10%	≤1.2	≤0.25	≥20	FDP	Aluminum	Conductive oxidation
MPHNWG84CIA01	6.57-9.99	≤15%	≤1.2	≤0.25	≥20	FBP	Aluminum	Conductive oxidation
MPHNWG100CIA01	8.20-12.4	≤15%	≤1.2	≤0.25	≥20	FBP	Aluminum	Conductive oxidation
MPHNWG120CIA01	9.84-15.0	≤15%	≤1.2	≤0.25	≥20	FBP	Aluminum	Conductive oxidation
MPHNWG140CIA01	11.9-18.0	≤15%	≤1.2	≤0.25	≥20	FBP	Aluminum	Conductive oxidation
MPHNWG180CIA01	14.5-22.0	≤15%	≤1.25	≤0.25	≥20	FBP	Aluminum	Conductive oxidation
MPHNWG220CIC01	17.6-26.7	≤15%	≤1.25	≤0.25	≥20	FBP	Copper	Silver plating
MPHNWG260CIC01	21.7-33.0	≤15%	≤1.25	≤0.25	≥20	FBP	Copper	Silver plating
MPHNWG320CIC01	26.5-40.0	≤15%	≤1.25	≤0.25	≥20	FBP	Copper	Silver plating

Typical Data

08 Sliding Short Plunger

Sliding short plunger is a microwave device with movable short surface and choke structure, the sliding distance is at least half the wavelength of the waveguide at the lowest frequency. The product is widely used in adjustable matching microwave system and measuring system. Company provides a series of high-performance sliding short plunger of VSWR up to 50 or more. The product surface can be treated by passivation, conductive oxidation, silver plating, etc. According to the actual needs of users, customized designs can be made for materials, external dimensions, flange forms, joint types, and surface processing methods.



Product model	Frequency range (GHz)	VSWR	Sliding distance (mm)	Material
MPHNWG3SSCA01	0.32-0.49	≥50	300	Aluminum
MPHNWG4SSCA01	0.35-0.53	≥50	240	Aluminum
MPHNWG5SSCA01	0.41-0.62	≥50	220	Aluminum
MPHNWG6SSCA01	0.49-0.75	≥50	180	Aluminum
MPHNWG8SSCA01	0.64-0.98	≥50	150	Aluminum
MPHNWG9SSCA01	0.75-1.15	≥50	130	Aluminum
MPHNWG12SSCA01	0.96-1.46	≥50	100	Aluminum
MPHNWG14SSCA01	1.13-1.73	≥50	90	Aluminum
MPHNWG18SSCA01	1.45-2.20	≥50	80	Aluminum/ Copper
MPHNWG22SSCA01	1.72-2.61	≥50	70	Aluminum/ Copper
MPHNWG26SSCA01	2.17-3.30	≥50	60	Aluminum/ Copper
MPHNWG32SSCA01	2.60-3.95	≥50	60	Aluminum/ Copper
MPHNWG40SSCA01	3.22-4.90	≥50	50	Aluminum/ Copper
MPHNWG48SSCA01	3.94-5.99	≥50	50	Aluminum/ Copper
MPHNWG58SSCA01	4.64-7.05	≥50	50	Aluminum/ Copper
MPHNWG70SSCA01	5.38-8.17	≥50	40	Aluminum/ Copper
MPHNWG84SSCA01	6.57-9.99	≥50	40	Aluminum/ Copper
MPHNWG100SSCA01	8.20-12.4	≥50	30	Aluminum/ Copper
MPHNWG120SSCA01	9.84-15.0	≥50	30	Aluminum/ Copper
MPHNWG140SSCA01	11.9-18.0	≥50	25	Aluminum/ Copper
MPHNWG180SSCA01	14.5-22.0	≥50	20	Aluminum/ Copper
MPHNWG220SSCA01	17.6-26.7	≥50	20	Aluminum/ Copper
MPHNWG260SSCA01	21.7-33.0	≥50	10	Aluminum/ Copper
MPHNWG320SSCA01	26.5-40.0	≥50	10	Aluminum/ Copper

Typical Data

09 Three-Stub Tuner

Three-stub tuner is a commonly impedance adjuster which used in high-power microwave system to achieve impedance matching. The depth, spacing and radius of the pins can be set as required. Company provides a series of high-performance three-stub tuner, the main frequency range is 915±15MHz, 2450±50MHz, 5800±75MHz, VSWR can be selected from 1.1 to 30. The product surface can be treated by passivation, conductive oxidation, silver plating, etc. According to the actual needs of users, customized designs can be made for materials, external dimensions, flange forms, joint types, and surface processing methods.

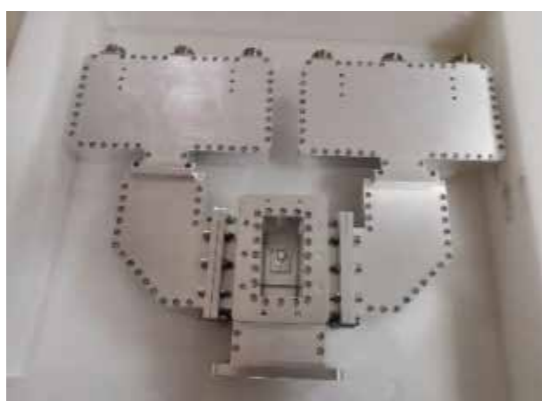


Product model	Waveguide type	Frequency range (MHz)	VSWR	Available maximum working power (kW)
MPWG9THTA01P75KW	BJ9 (WR975)	915±15MHz	1.1~30	75
MPWG9THTA01P30KW	BJ9 (WR975)	915±15MHz	1.1~30	30
MPWG9THTA01P5KW	BJ9 (WR975)	915±15MHz	1.1~30	5
MPWG22THTA01P20KW	BJ22 (WR430)	2450±50MHz	1.1~30	20
MPWG22THTA01P10KW	BJ22 (WR430)	2450±50MHz	1.1~30	10
MPWG22THTA01P6KW	BJ22 (WR430)	2450±50MHz	1.1~30	6
MPWG26THTA01P20KW	BJ26 (WR340)	2450±50MHz	1.1~30	20
MPWG26THTA01P10KW	BJ26 (WR340)	2450±50MHz	1.1~30	10
MPWG26THTA01P6KW	BJ26 (WR340)	2450±50MHz	1.1~30	6
MPWG32THTA01P10KW	BJ32 (WR284)	2450±50MHz	1.1~30	10
MPWG58THTA01P6KW	BJ58 (WR159)	5800±75MHz	1.1~30	6

Typical Data

10 Combiner/Power Divider

Combiner can combine the input multi-channel signals or microwave energy to one output end. It is widely used in the field of high-power microwave synthesis. Company provides a series of products, such as combiner/power divider, waveguide ET, waveguide HT, magic-T, etc., which have the advantages of low VSWR, low IL and good phase consistency. The product surface can be treated by passivation, conductive oxidation, silver plating, etc. According to the actual needs of users, customized designs can be made for materials, external dimensions, flange forms, joint types, and surface processing methods.



Product model	Frequency range (GHz)	Bandwidth	VSWR		Symmetry (dB)	Isolation E-H(dB)	Flange form	Material	Surface processing method
			Port H	Port E					
MPHNWG3MTA01	0.32-0.49	≤20%	≤1.2	≤1.4	≤0.25	≥30	FDP	Aluminum	Conductive oxidation
MPHNWG4MTA01	0.35-0.53	≤20%	≤1.2	≤1.4	≤0.25	≥30	FDP	Aluminum	Conductive oxidation
MPHNWG5MTA01	0.41-0.62	≤20%	≤1.2	≤1.4	≤0.25	≥30	FDP	Aluminum	Conductive oxidation
MPHNWG6MTA01	0.49-0.75	≤20%	≤1.2	≤1.4	≤0.25	≥30	FDP	Aluminum	Conductive oxidation
MPHNWG8MTA01	0.64-0.98	≤20%	≤1.2	≤1.4	≤0.25	≥30	FDP	Aluminum	Conductive oxidation
MPHNWG9MTA01	0.75-1.15	≤20%	≤1.2	≤1.4	≤0.25	≥30	FDP	Aluminum	Conductive oxidation
MPHNWG12MTA01	0.96-1.46	≤20%	≤1.2	≤1.4	≤0.25	≥30	FDP	Aluminum	Conductive oxidation
MPHNWG14MTA01	1.13-1.73	≤20%	≤1.2	≤1.4	≤0.25	≥30	FDP	Aluminum	Conductive oxidation
MPHNWG18MTA01	1.45-2.20	≤20%	≤1.2	≤1.4	≤0.25	≥30	FDP	Aluminum	Conductive oxidation
MPHNWG22MTA01	1.72-2.61	≤20%	≤1.2	≤1.4	≤0.35	≥30	FDP	Aluminum	Conductive oxidation
MPHNWG26MTA01	2.17-3.30	≤20%	≤1.2	≤1.4	≤0.35	≥30	FDP	Aluminum	Conductive oxidation
MPHNWG32MTA01	2.60-3.95	≤20%	≤1.2	≤1.4	≤0.35	≥30	FDP	Aluminum	Conductive oxidation
MPHNWG40MTA01	3.22-4.90	≤20%	≤1.2	≤1.4	≤0.35	≥30	FDP	Aluminum	Conductive oxidation
MPHNWG48MTA01	3.94-5.99	≤20%	≤1.2	≤1.4	≤0.35	≥30	FDP	Aluminum	Conductive oxidation
MPHNWG58MTA01	4.64-7.05	≤20%	≤1.2	≤1.4	≤0.35	≥30	FDP	Aluminum	Conductive oxidation
MPHNWG70MTA01	5.38-8.17	≤20%	≤1.2	≤1.4	≤0.35	≥30	FDP	Aluminum	Conductive oxidation
MPHNWG84MTA01	6.57-9.99	≤20%	≤1.2	≤1.4	≤0.35	≥30	FBP	Aluminum	Conductive oxidation
MPHNWG100MTA01	8.20-12.4	≤20%	≤1.2	≤1.4	≤0.35	≥30	FBP	Aluminum	Conductive oxidation
MPHNWG120MTA01	9.84-15.0	≤20%	≤1.2	≤1.4	≤0.35	≥30	FBP	Aluminum	Conductive oxidation
MPHNWG140MTA01	11.9-18.0	≤20%	≤1.2	≤1.4	≤0.35	≥30	FBP	Aluminum	Conductive oxidation
MPHNWG180MTA01	14.5-22.0	≤20%	≤1.2	≤1.4	≤0.35	≥30	FBP	Aluminum	Conductive oxidation
MPHNWG220MTC01	17.6-26.7	≤20%	≤1.2	≤1.4	≤0.35	≥30	FBP	Copper	Silver plating
MPHNWG260MTC01	21.7-33.0	≤20%	≤1.2	≤1.4	≤0.35	≥30	FBP	Copper	Silver plating
MPHNWG320MTC01	26.5-40.0	≤20%	≤1.2	≤1.4	≤0.35	≥30	FBP	Copper	Silver plating

Typical Data

11 Waveguide Calibrator

Company provides a series of waveguide calibrators. VSWR of waveguide-to-coax adapter is less than 1.2, VSWR of precision waveguide load is less than 1.02, VSWR of short circuitry is greater than 60, and the reflection coefficient of calibrated port is less than -50dB.



Product model	Frequency range (GHz)	Waveguide type	Material
MPHNWG9CALA01	0.75-1.15	BJ9 (WR975)	Aluminum
MPHNWG12CALA01	0.96-1.46	BJ12 (WR770)	Aluminum
MPHNWG14CALA01	1.13-1.73	BJ14 (WR650)	Aluminum
MPHNWG18CALA01	1.45-2.20	BJ18 (WR510)	Aluminum
MPHNWG22CALA01	1.72-2.61	BJ22 (WR430)	Aluminum
MPHNWG26CALA01	2.17-3.30	BJ26 (WR340)	Aluminum
MPHNWG32CALA01	2.60-3.95	BJ32 (WR284)	Aluminum
MPHNWG40CALA01	3.22-4.90	BJ40 (WR229)	Aluminum
MPHNWG48CALA01	3.94-5.99	BJ48 (WR187)	Aluminum
MPHNWG58CALA01	4.64-7.05	BJ58 (WR159)	Aluminum
MPHNWG70CALA01	5.38-8.17	BJ70 (WR137)	Aluminum
MPHNWG84CALA01	6.57-9.99	BJ84 (WR112)	Aluminum
MPHNWG100CALA01	8.20-12.4	BJ100 (WR90)	Aluminum
MPHNWG120CALA01	9.84-15.0	BJ120 (WR75)	Aluminum
MPHNWG140CALA01	11.9-18.0	BJ140 (WR62)	Aluminum
MPHNWG180CALC01	14.5-22.0	BJ180 (WR51)	Copper
MPHNWG220CALC01	17.6-26.7	BJ220 (WR42)	Copper
MPHNWG260CALC01	21.7-33.0	BJ260 (WR34)	Copper
MPHNWG320CALC01	26.5-40.0	BJ320 (WR28)	Copper

Typical Data

12 Waveguide Power Meter

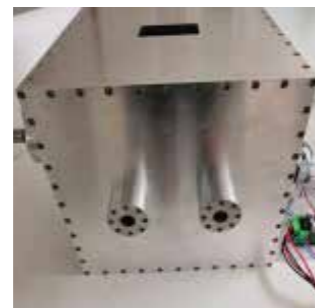
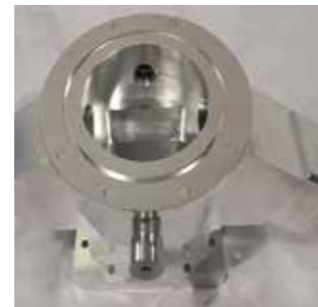
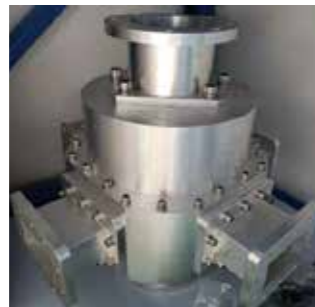
THE WAVEGUIDE POWER METER CAN DETECT THE INCIDENT POWER AND REFLECTED POWER IN THE MICROWAVE WAVEGUIDE SYSTEM, AND CAN COMMUNICATE WITH THE COMPUTER FOR VIEWING THE RECORDS IN REAL TIME. A VARIETY OF WAVEGUIDE SPECIFICATIONS SUCH AS WR975/WR430/WR340/WR284 ARE AVAILABLE. THE PRODUCT HAS THE ADVANTAGES OF HIGH MEASUREMENT ACCURACY AND FAST SAMPLING RATE.



Waveguide type	BJ9 (WR975)	BJ26 (WR340)
Frequency range	895MHz~925MHz	2425MHz~2475MHz
Available maximum working power	≤100kW	≤30kW
Incident power measurement error	≤±5%	≤±5%
Directivity	≥20dB	≥20dB
Sampling speed	≤100ms	≤100ms
Power supply voltage	24V ±10% DC	24V ±10% DC
Peak current consumption	<0.4A	<0.4A
Cooling mode	Air-Cooling	Air-Cooling
Interface	RS485	RS485
Overall dimensions (length * width * height)	260mm×336.6mm×306.26mm	240mm×138.1mm×195.24mm

13 Custom Microwave Reaction Cavity

COMPANY CAN CUSTOMIZE VARIOUS FORMS OF MICROWAVE REACTION CAVITY ACCORDING TO CUSTOMER NEEDS, AND PROVIDE DESIGN AND SIMULATION TECHNICAL SUPPORT.



14 Typical Applications of Microwave Energy Systems

14.1 Microwave Thermogravimeter



Microwave thermogravimeter is a precise instrument for observing the weight change of the sample during the rapid heating process under the high-power microwave radiation. The instrument can collect data online, and display information such as microwave radiation power, time, temperature, and weight on the screen. The touch screen can set the temperature or input power, and can set the temperature rise rate and output power in stages according to the actual heating demand.

Main Technical Parameters:

- 1、 Temperature range: Room temperature to 1200 degrees.
- 2、 Heating rate: 1 to 80 degrees per minute.
- 3、 Temperature control: The program can be controlled according to the need to adjust the parameters.
- 4、 Temperature measurement: Infrared temperature measurement.
- 5、 microwave source: 2450MHz±50MHz, 1kW.
- 6、 Atmosphere control: Determined by the external atmosphere, reserved atmosphere input port.
- 7、 Display usage: 24bit color, 7-inch LCD touch screen display.
- 8、 The maximum weighing mass is 50 g, the analysis accuracy: 0.02 g, and the sample is loaded in a quartz test tube.

Application:

Microwave thermogravimeter is mainly used for laboratory analysis of the weight change of samples in the process of rapid heating, and is widely used in metallurgy, pharmaceutical, chemical experiments, and other research fields.

14 Typical Applications of Microwave Energy Systems

14.2 High-Power Microwave Heating System with Constant Temperature and Humidity Control



High-power microwave heating system with constant temperature and humidity control is mainly composed of microwave source (including microwave power supply and microwave head), waveguide parts (including circulator, water load, waveguide power meter and three-stub tuner), microwave reaction cavity, temperature control system, humidity control system, weighing system, water cooling circulation system, etc. It can realize the functions of rapid heating of samples, temperature detection and control, thermal imaging, humidity detection and control, weight detection, and real-time camera monitoring, etc.

Main Technical Parameters

1. Input voltage: $380V \pm 10\%AC$, $50Hz \pm 2Hz$.
2. Microwave power: $\geq 15kW$, 10%~100% continuous adjustment.
3. Frequency range: $2450MHz \pm 30MHz$.
4. Microwave source protection: Filament under-current, over-current; anode over-voltage, over-current; ignition; magnetron over-temperature; water flow protection; reflection protection.
5. Cooling mode: Water-cooling, the water flow should not be less than 8L per minute.
6. IL of circulator: $\leq 0.2dB$.
7. Isolation of circulator: $\geq 20dB$.
8. VSWR of circulator: ≤ 1.2 .
9. VSWR of water load: ≤ 1.2 .
10. Microwave reaction cavity: Three heating methods can be realized: heating with the strongest field intensity in the specified area of the cavity, concentrating microwave energy to the designated surface, and concentrating the microwave energy to heating in the customized cavity.
11. VSWR of the system: Can be adjusted by three-stub tuner to achieve the best absorption rate.
12. Adjustment range of VSWR: 1.1 to 30.
13. Infrared thermal imager: Optical resolution ratio: 382×288 pixels; Working wavelength: $8 \sim 14\mu m$; Temperature measurement range: $-20^{\circ}C \sim 900^{\circ}C$; Accuracy: $\pm 2^{\circ}C$ or $\pm 2\%$, take greater value.

14. Maximum weighing mass 5000g, analysis accuracy: 0.1g.

15. High-definition lens for scientific research microscope: Pixels: 10 million; online connection to computer for real-time viewing;

16. Temperature control system: The target heating temperature can be set. The samples can be heated to the target temperature as quickly as possible by adjusting the power and maintained at a constant temperature. It can also be heated to a specified temperature and maintained at a constant temperature by setting a constant power.

17. Power detection: The waveguide power meter can detect the incident power and reflected power in the microwave waveguide system, and can communicate with the computer for viewing the records in real time.

18. Operating environment: Operating temperature: $-10 \sim 40^{\circ}C$; Storage temperature: $-20 \sim 50^{\circ}C$; Humidity: 95% without condensation; Altitude: less than 3000m;

